

***Grand Avenue  
Northwest Corridor Study***

***WORKING PAPER NO. 4***

***ENVIRONMENTAL ISSUES AND  
TITLE VI / ENVIRONMENTAL JUSTICE***

***April 12, 2001***

***Prepared for***



***Prepared by***

**URS**

***In association with BRW and A. Dye Design***

## ***Table of Contents***

---

|  | <b><i>Page</i></b> |
|--|--------------------|
| EXECUTIVE SUMMARY.....                                   | 1                  |
| 1.0 INTRODUCTION .....                                   | 3                  |
| 2.0 ENVIRONMENTAL FEATURES .....                         | 3                  |
| 2.1 Physical Constraints .....                           | 3                  |
| 2.2 Sensitive Plant and Animal Species.....              | 5                  |
| 2.3 Cultural Resources .....                             | 5                  |
| 2.4 Section 4(f) Properties.....                         | 5                  |
| 2.5 Floodplains.....                                     | 6                  |
| 2.6 Air Quality.....                                     | 6                  |
| 2.7 Noise Receptors.....                                 | 7                  |
| 3.0 TITLE VI AND ENVIRONMENTAL JUSTICE POPULATIONS ..... | 7                  |

## ***List of Exhibits***

| <b><i>Exhibit</i></b> | <b><i>Title</i></b>                                  | <b><i>Page</i></b> |
|-----------------------|--|--------------------|
| 2.1                   | Environmental Features and Physical Constraints..... | 4                  |
| 3.1                   | Population by Race.....                              | 10                 |
| 3.2                   | Population by Age .....                              | 11                 |
| 3.3                   | Population by Mobility Disability.....               | 12                 |
| 3.4                   | Low Income Population.....                           | 13                 |
| 3.5                   | Female Head of Household.....                        | 14                 |

## ***EXECUTIVE SUMMARY***

The goal of this working paper is to identify environmental issues that may create “fatal flaws” for the proposed improvements in the corridor. This working paper will also address environmental justice and Title VI requirements for the study.

### ***Environmental Features***

Below is a summary of the environmental features found within the corridor.

#### ***Physical Constraints***

- Hospitals (Boswell Memorial and Del E. Webb Memorial)
- Fire Stations
- Potential hazardous material sites
- New and Agua Fria Rivers
- Burlington Northern Santa Fe (BNSF) Railroad

#### ***Sensitive (Threatened or Endangered) Plant and Animal Species***

None identified

#### ***Cultural Resources (Either Historical or Prehistoric)***

Railroad bridge over the Agua Fria River (potentially eligible)

#### ***Section 4(f) Considerations (Parkland and Other Public Lands or Facilities)***

- 5 public parks
- 2 schools
- Several golf courses and community parks associated with Sun City Communities

#### ***Floodplains***

- Agua Fria River
- New River (boundary contained within the abutments of existing structures)

#### ***Air Quality***

Study corridor is in a regional non-attainment area for ozone, carbon monoxide, and particulates.

#### ***Noise Receptors***

- Section 4(f) properties listed above
- Residential neighborhoods adjacent to Grand Avenue

None of the environmental features above appear to present fatal flaws for improvements within the corridor. However, they will have to be evaluated when considering individual improvement projects. Additional environmental concerns could be identified during the environmental assessment and design phases of proposed projects.

### ***Title VI and Environmental Justice***

The Grand Avenue corridor has high percentages of the populations protected under Title VI. These include minority, elderly, mobility disabled, low income and female head of households. As projects are developed and evaluated during this corridor study, impacts to these populations will be evaluated. The evaluation will ensure that these populations are not disproportionately affected negatively by or discriminated against by the overall set of projects to be recommended in the Grand Avenue Northwest Corridor Study. It is more likely that transportation improvement projects within the corridor will serve and benefit the residents of the corridor regardless of their census population classification.

## **1.0 INTRODUCTION**

The goal of this working paper is to identify environmental issues that may create “fatal flaws” for the proposed improvements in the corridor. This working paper will also address environmental justice and Title VI requirements for the study. Environmental features that may affect transportation-related improvements at specific locations include:

- Physical constraints
- Sensitive (threatened or endangered) plant and animal species
- Cultural resources (either historical or prehistoric)
- Section 4(f) considerations (parkland and other public lands or facilities)
- Floodplains
- Air quality
- Noise receptors

Title VI and Environmental Justice population characteristics evaluated include:

- Race (percent non-white)
- Age (percent age 60 and older)
- Mobility disability (prevalence of persons with mobility or self-care limitations)
- Low income (as defined by federal poverty guidelines)
- Female head of households (percent single female parent)

## **2.0 ENVIRONMENTAL FEATURES**

### **2.1 Physical Constraints**

For purposes of this study, environmental constraints are defined as natural or man-made features that could constrain future transportation facilities or improvements. As Exhibit 2-1 illustrates, waterways including the New and Agua Fria rivers are the major natural constraints in the Northwest Valley. Only Grand Avenue, Bell Road, and Olive Avenue provide bridge crossings over both rivers within the study area. Man-made constraints include development features that preclude continuation of the roadway grid or roadway system improvements. Hospitals and fire stations provide critical emergency services that must not be interrupted. Exhibit 2-1 shows the location of hospitals and fire stations. Two hospitals within the study area include Boswell Memorial Hospital at 107<sup>th</sup> Avenue and Del E. Webb Memorial Hospital at Meeker Boulevard. Both hospitals are located on the northeast side of Grand. The roadway network must provide emergency vehicle access to all residential and commercial land uses; therefore, roadway standards must reflect the needs of these vehicles. The BNSF railroad paralleling Grand Avenue can be considered a physical constraint.

Exhibit 2-1 also shows the location of industrial sites and potential hazardous material sites at locations with underground storage tanks. Clean-up of these sites would be required if impacted by roadway improvements.

**Exhibit 2-1. Environmental Features and Physical Constraints**

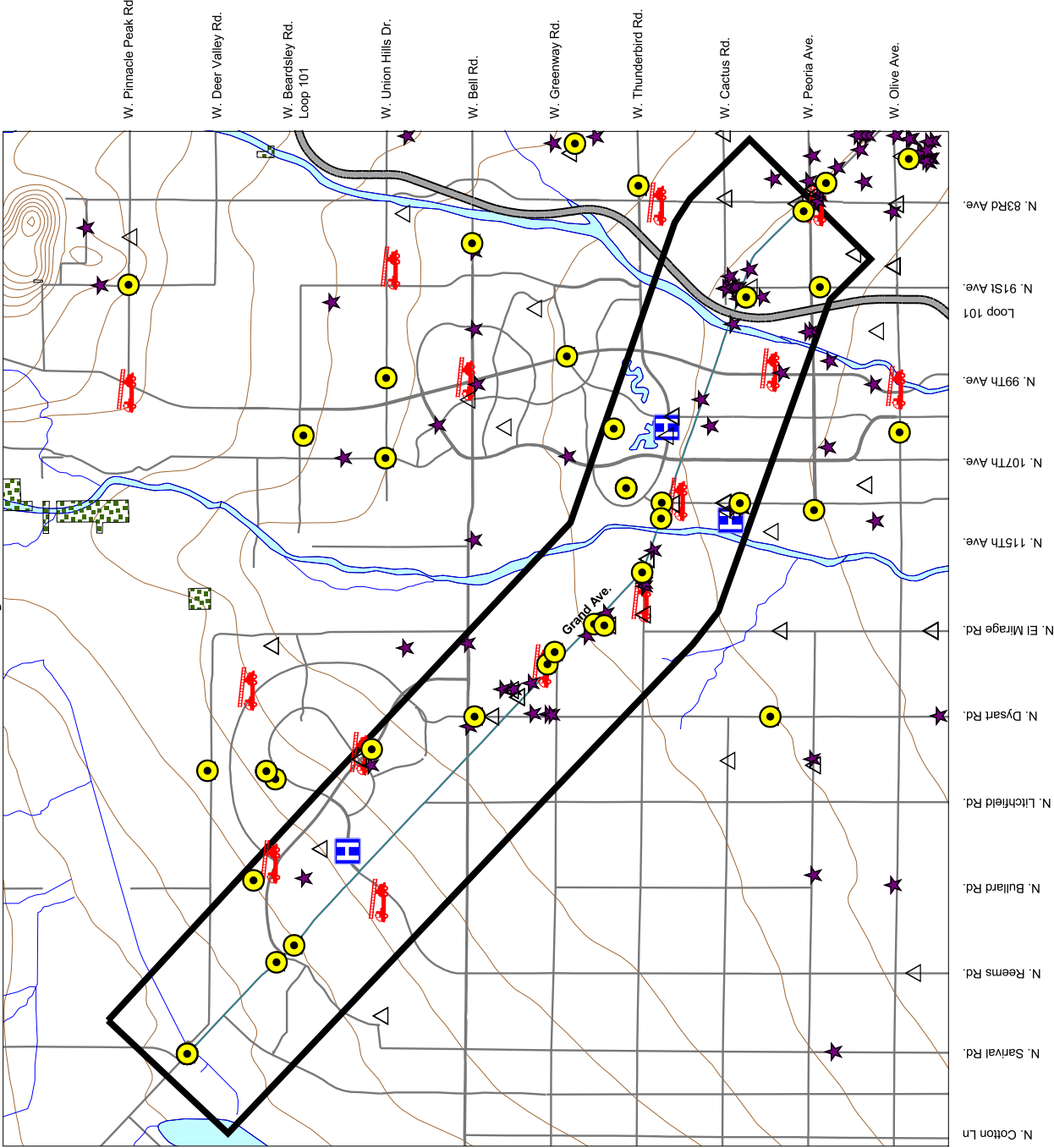
# **Grand Avenue Northwest Corridor Study**

## **Features and Constraints**

- Underground Storage Tanks
- Leaking Underground Storage Tanks
- Industrial Sites
- Hospitals
- Fire Stations
- BLM Land
- Landform Contours

## **Base Map Features**

- Study Area Boundary
- Freeways
- Streets
- Water Bodies
- Rivers/Washes



1 0 1 2 3 Miles

Source: Northwest Valley Transportation Study 1999; MCDOT GIS Database  
File: R:\Mag\project\_files\grand\_socioeconomic1.apr

## **2.2 Sensitive Plant and Animal Species**

The *Grand Avenue Corridor Study Environmental Assessment, 1986* noted that according to the U.S. Fish and Wildlife Service, Arizona Game and Fish Department and Arizona Native Plant Law, no species (wildlife or vegetation) of concern were known to exist in the corridor. However, these agencies will need to be contacted during subsequent environmental assessments if major projects are proposed.

## **2.3 Cultural Resources**

A survey of the cultural resources in the corridor was conducted in March 1986. Results from the survey are documented in the *Grand Avenue Corridor Cultural Resource Survey, June 1986*.

There were no properties currently listed or previously determined to be eligible for listing on the National Register. One property and one structure were identified as potentially eligible for listing on the National Register. The property was the Maricopa County Municipal Water Conservation District #1 Shop Building located at milepost 140 on Grand Avenue. The buildings are no longer on the property. The structure potentially eligible is the railroad bridge over the Agua Fria River.

The National Register of Historic Places was established by the National Historic Preservation Act of 1966, as amended in 1980. It is the nation's official listing of prehistoric and historic properties worthy of preservation. It affords recognition and protection for districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering and culture. The Register serves as a planning tool and as a means of identifying sites and districts that are of special significance to a community and worthy of preservation. A review of the National Register Information System found no listings within the Grand Avenue Northwest Corridor.

The Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) Collections are collections of documentary measured drawings, photographs, and written historical and architectural information for over 31,000 structures and sites in the United States. The U.S. Department of the Interior administers the surveys and creates the records, which are transferred to the Library of Congress. Architectural and engineering structures and sites of almost every type, including residential, commercial, public, religious, military, and industrial categories, have been recorded in these collections. A review of the on-line geographic index found no listings within the Grand Avenue Northwest Corridor.

## **2.4 Section 4(f) Properties**

Properties identified under section 4(f) of the Department of Transportation Act of 1966 are protected by the FHWA from being used in roadway projects. Properties could include public parks, and schools allowing public access to sport/ playground facilities. Potential 4(f) properties within the corridor include golf courses and community parks along both sides of Grand Avenue as part of Sun City, Sun City West, and Sun City Grand. Schools are located on the southeast corner of Dysart Road and Greenway Road and the southwest corner of Thunderbird Road and El Mirage Road. A cemetery, Floral Lakes Memorial Gardens, is located south of Grand Avenue

just east of Greenway Road. Five public parks are located within the corridor: Bicentennial Park, Gaines Park, Three Star Park, Bill Gentry Park, and Maricopa Lakes Park.

## **2.5 Floodplains**

Existing drainage conditions within the corridor can be separated into four sections along Grand Avenue:

### ***Beardsley Canal to the Agua Fria River***

Drainage flow in this area is to the southeast, generally parallel to Grand Avenue. The McMiken Dam intercepts flows west of the study corridor. The BNSF railroad tracks protect Grand Avenue along the north side throughout the segment. Sun City West is also located northeast of the tracks and has a self-contained drainage system. An unpaved drainage ditch runs parallel to Grand Avenue on the northeast side between Loop 303 and Dysart Road. A paved drainage ditch runs parallel to Grand Avenue on the southwest side between Dysart Road and Thunderbird Road, where it enters a pipe and outfalls at the Agua Fria River.

### ***Agua Fria River***

The most recent floodplain delineation of the Agua Fria River was obtained from the *Agua Fria River Floodplain Delineation Re-Study* in 1996. The 100-year floodplain boundary will be shown on any nearby proposed improvement projects' layouts. Projects are not restricted from being located in the floodplain; however, additional considerations will be required during design of the projects.

### ***Agua Fria River to the New River***

Sun City lies to the northeast of Grand Avenue and has a system of channels in place to control drainage. Flow is from north to south. Two major drainage channels protect Grand Avenue; one draining west from 107<sup>th</sup> Avenue to the Agua Fria River and the other draining east from 107<sup>th</sup> Avenue to the New River. Both channels are located on the northeast side of the BNSF railroad tracks. The railroad tracks are several feet higher than Grand Avenue and provide additional protection to Grand Avenue.

### ***New River***

The completion of the New River Dam reduced the floodplain area at Grand Avenue to containment within the existing railroad and roadway bridge openings.

## **2.6 Air Quality**

The U.S. Environmental Protection Agency (EPA) maintains a national air quality monitoring network to assess the presence of principal air pollutants affecting the ambient (general) air quality in major metropolitan areas throughout the nation. Pollutants considered to have a potentially significant effect on human health include the following:



- Carbon monoxide (CO) — an invisible, odorless gas generated when motor fuel is not burned completely. Sufficiently high concentrations cause unconsciousness and death. CO tends to build up and persist in “hot spots” when high emissions levels occur in a localized area.
- Ozone — is a secondary pollutant created by a chemical reaction between oxides of nitrogen (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the presence of heat and light. The burning of fossil fuels such as gasoline, diesel fuel and wood are major sources of NO<sub>x</sub> and VOCs. Ozone is created when sunlight and heat react with nitrous oxides and chemicals called volatile organic compounds.
- PM-10 — small particles that are less than 10 microns in diameter and that are emitted into the air from vehicles (particularly diesel trucks), combustion, construction work and other activities that raise dust. Natural forces such as dust storms can also raise ambient PM-10 levels.

The principal environmental concerns affecting transportation in the Northwest Valley are the air quality non-attainment areas for ozone, carbon monoxide and PM-10. The entire study area falls within a regional non-attainment area for ozone, carbon monoxide and PM-10. Projects increasing roadway capacity recommended in the Grand Avenue Northwest Corridor Study will have to be evaluated to determine if they conform to local air quality improvement plans.

## **2.7 Noise Receptors**

Many residential subdivision abut up to Grand Avenue on the southwest side of the roadway. Any major roadway improvement will need to be evaluated for noise impacts during the preliminary design and environmental assessment stage of the project to determine if noise mitigation measures are needed. The section 4(f) properties identified above will be considered noise receptors and impacts to these properties will also have to be evaluated. Projects will be evaluated against ADOT’s Noise Abatement Policy.

## **3.0 TITLE VI AND ENVIRONMENTAL JUSTICE POPULATIONS**

Title VI of the Civil Rights Act of 1964 and related statutes assure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, religion, age, gender or disability. Executive Order 12898 on Environmental Justice directs that programs, policies and activities not have a disproportionately large and adverse human health and environmental effect on minority and low-income populations.

In recent years there has been increased attention and focus on ensuring equity, environmental justice and Title VI compliance in the delivery of government programs. Recipients of federal assistance for transportation-related projects are now required to assure compliance with all civil rights standards applicable to the specified transportation-related projects, as they relate to Title VI of the Civil Rights Act of 1964, as amended. Title VI of the 1964 Civil Rights Act, Section 601, states: “No person in the United States shall, on the grounds of race, color or

national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.”

To be consistent with the requirements of Title VI and environmental justice, the demographic characteristics of the study area population were examined to determine whether various specified populations would be disproportionately affected negatively by or discriminated against by the overall set of projects to be recommended in the Grand Avenue Northwest Corridor Study. Projects developed for the Grand Avenue Northwest Corridor Study could be funded from federal sources. Therefore, these recommended projects are conceived and presented in a manner to assure that they are compliant with Title VI requirements in the event that they become improvement projects that use a federally funded revenue source. Specific construction projects will be analyzed for potential Title VI impacts as part of the environmental analysis phase, when they become programmed in future years. The following variables were considered:

- Race (percent non-white)
- Age (percent age 60 and older)
- Mobility disability (prevalence of persons with mobility or self-care limitations)
- Low income (as defined by federal poverty guidelines)
- Female head of households (percent single female parent)

Exhibits 3-1 through 3-5 map the proportion of the population belonging to each of these groups by census tract. The maps are based on 1995 Special Census data collected for Maricopa County, except for population with a mobility disability (Figure 3-3) which is based on the 1990 Census.

The minority population describes the ethnic background for each person within the population and includes individuals who are African American, Hispanic, Asian / Pacific Islander, Native American, or Alaskan Native. Exhibit 3-1 shows the percent of non-White residents by census tract. The percentage ranges from less than 5% in some areas, especially the Sun Cities, to more than 40% in a few tracts in El Mirage. According to *the MAG 1995 Special Census Summary Table 2E*, 28% of the total population in Maricopa County was classified as minority.

Elderly refers to individuals 60 years of age and older. Exhibit 3-2 illustrates the percent of the population considered elderly. As one would expect, this percentage is highest (over 60%) in the established retirement communities of Sun City, Sun City West and Sun City Grand. The more sparsely populated areas north and west of the study area also have a relatively high proportion of seniors, although this may change as these areas experience higher-intensity development. A total of 12.6% of Maricopa County individuals are elderly.

Mobility Disability has been defined as the populations of persons, 16 years of age and older, who have been identified as having a mobility limitation due to a health condition. These health conditions are further defined as having lasted six or more months and have made it difficult to travel outside the home unassisted. Mobility Disability data were obtained from the 1990 Census database. Exhibit 3-3 shows a high percent of residents in the corridor with a disability. The highest proportions tend to exist in and near Sun City and Sun City Grand areas. Not

surprisingly, there is a noticeable relationship between advanced age (Exhibit 3-2) and disability (Exhibit 3-3). A total of 6% of Maricopa County individuals have a mobility disability.

Low income populations are defined as households that fall below the federal poverty guidelines. To correspond to 1995 Census data, 1995 federal poverty guidelines were used to determine low income populations. Poverty status in 1995 was defined as households earning an annual income that is equal to or less than the following:

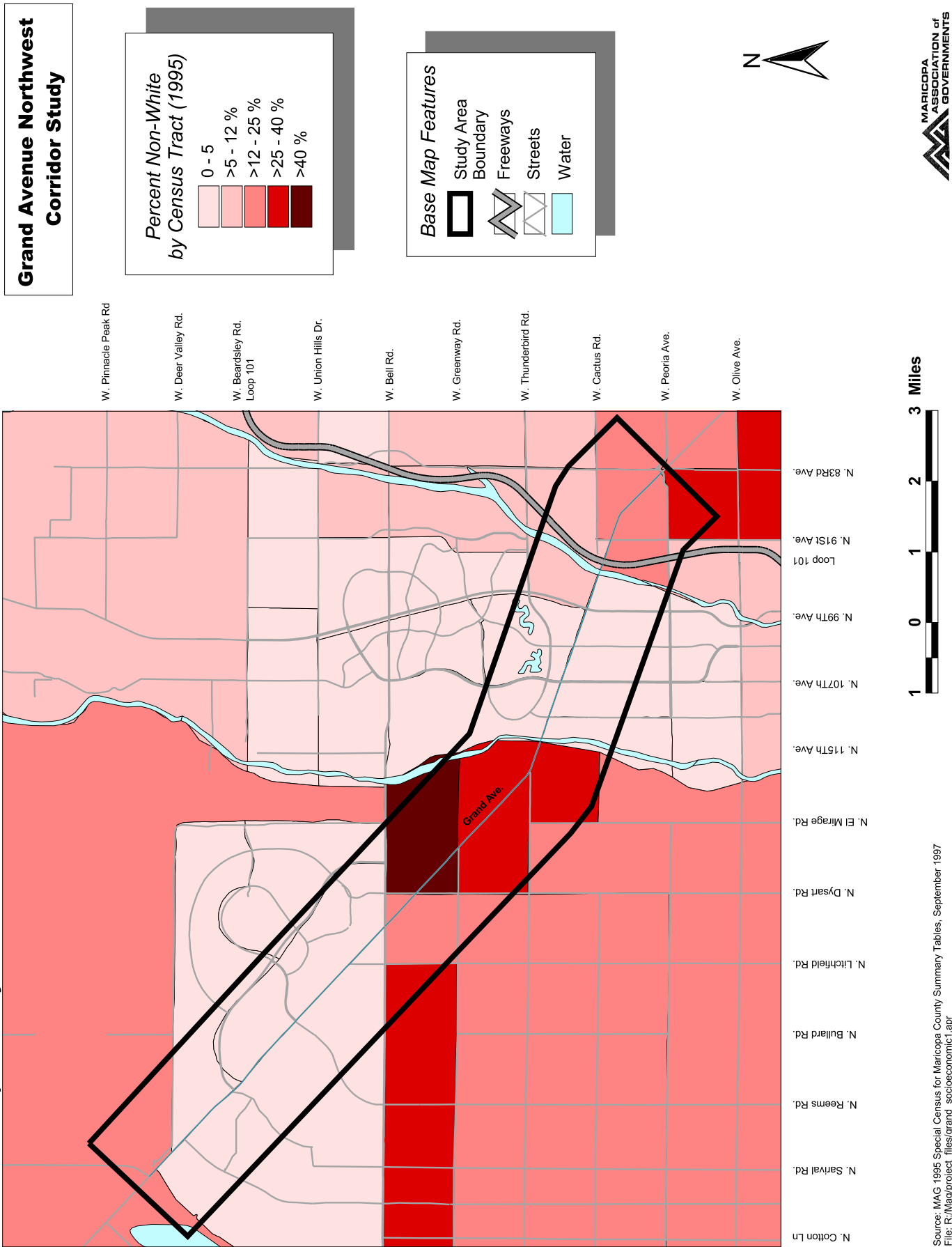
- One-person household earning \$7,500 or less
  - Two-person household earning \$10,000 or less
  - Three-person household earning \$12,500 or less
  - Four or more person household earning \$15,000 or less
- (Source: MAG 1995 Special Census Summary Tables, Appendix A-2)

The percentage of households identified as “low income” is shown in Exhibit 3-4 and ranges from under 3% in some census tracts to more than 25% in the older portion of El Mirage. A total of 10% of the households in Maricopa County are considered low income households.

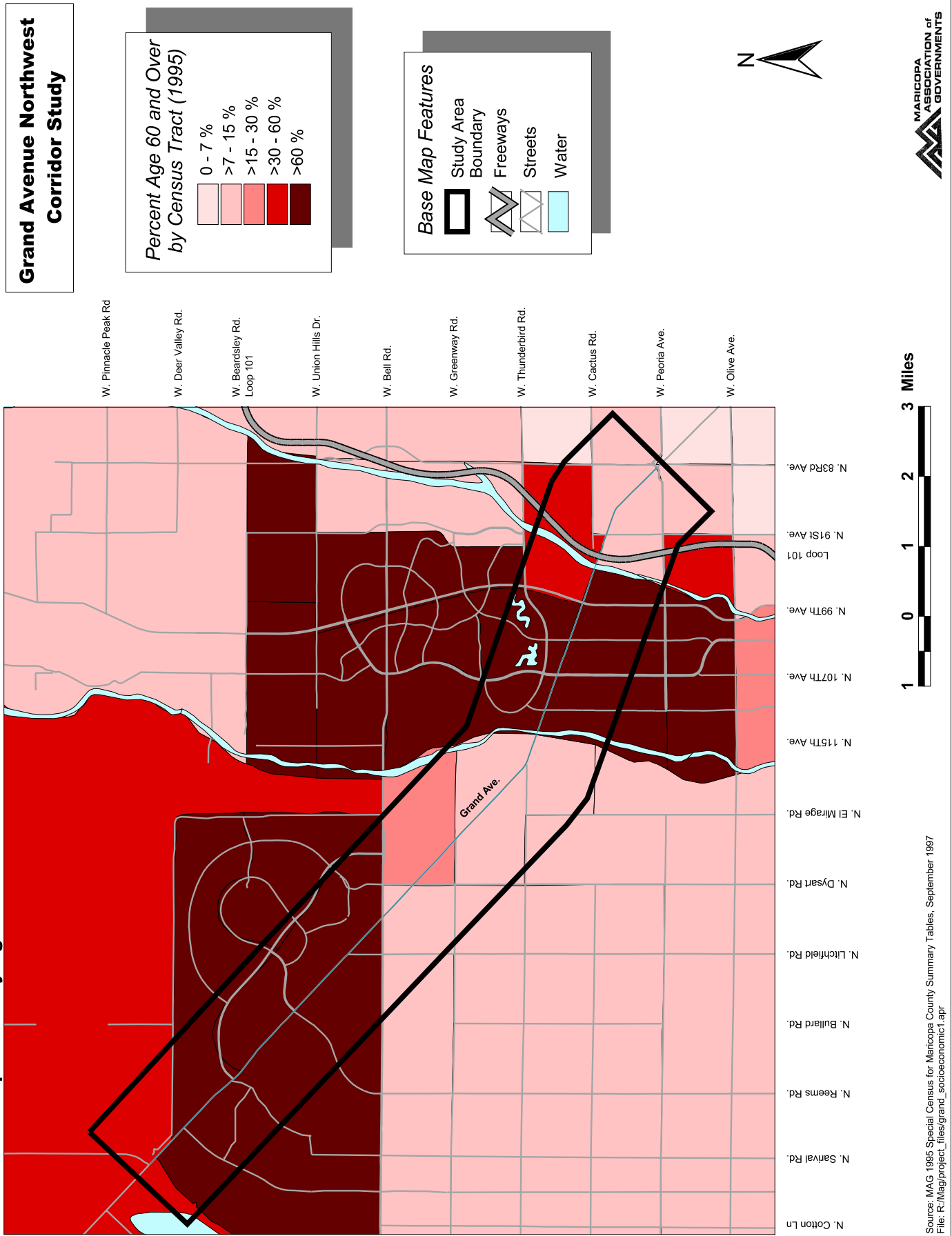
A female head of household is defined as a household that is maintained by a single female parent. Exhibit 3-5 shows the percentage of female head of households for the corridor. Female head of household populations are highest in sections of El Mirage with 15% to 20% of households being maintained by a single female parent. A total of 11.6% of the households in Maricopa County are maintained by a single female parent.

As Exhibits 3-1 through 3-5 illustrate, the Grand Avenue corridor has high percentages of the populations protected under Title VI. As projects are developed and evaluated during this corridor study, impacts to these populations will be evaluated. The evaluation will ensure that these populations are not disproportionately affected negatively by or discriminated against by the overall set of projects to be recommended in the Grand Avenue Northwest Corridor Study. It is more likely that transportation improvement projects within the corridor will serve and benefit the residents of the corridor regardless of their census population classification.

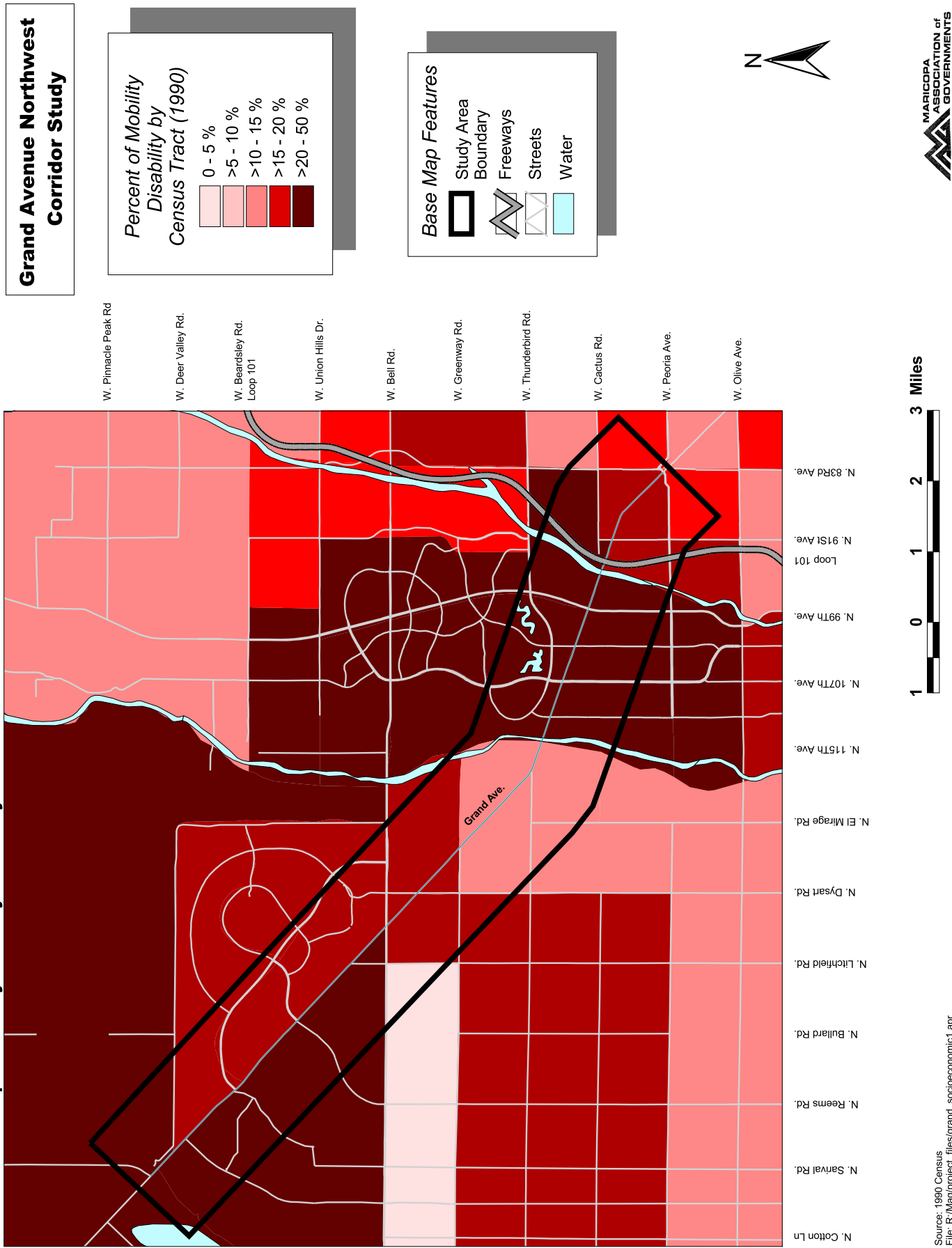
**Exhibit 3-1. Population by Race**



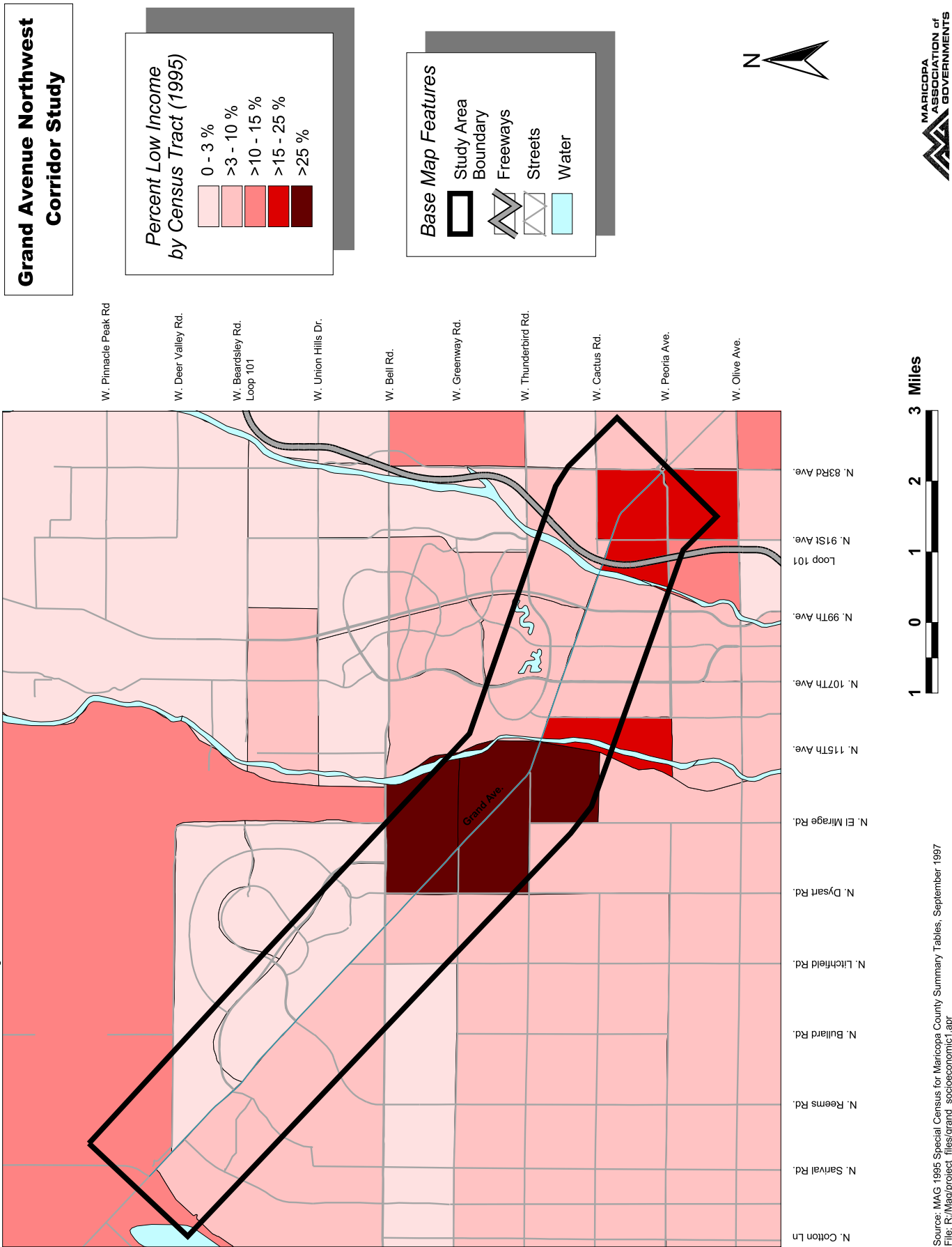
**Exhibit 3-2. Population by Age**



**Exhibit 3-3. Population by Mobility Disability**



**Exhibit 3-4. Low Income Population**



**Exhibit 3-5. Female Head of Household**

